

Notice of Allowability

Application No.

09/830,559

Examiner

Peter G. O'Sullivan

Applicant(s)

CHAKI ET AL.

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to applicants' amendment filed 7 May 2007.
2. ☒ The allowed claim(s) is/are 9-11, 16-21, 28, 29, 31, 35, 37, 39-41, 45, 46 and 50-53 -- renumbered 1-23.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

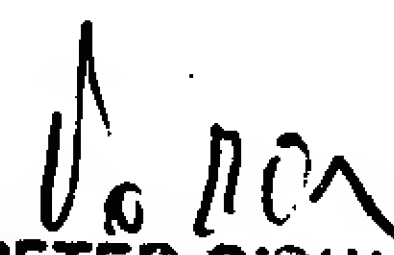
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

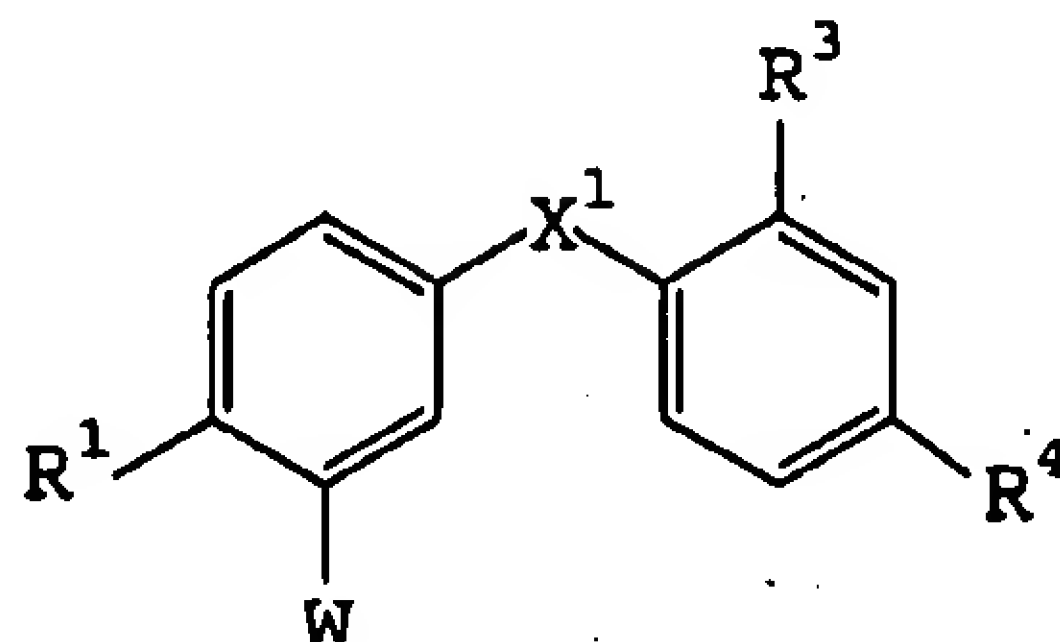
1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


PETER O'SULLIVAN
PRIMARY EXAMINER
GROUP 1200

IN THE CLAIMS

Claims 1-8 (Canceled)

Claim ~~9~~¹ (Previously Presented) A benzene derivative represented by the following formula:



wherein

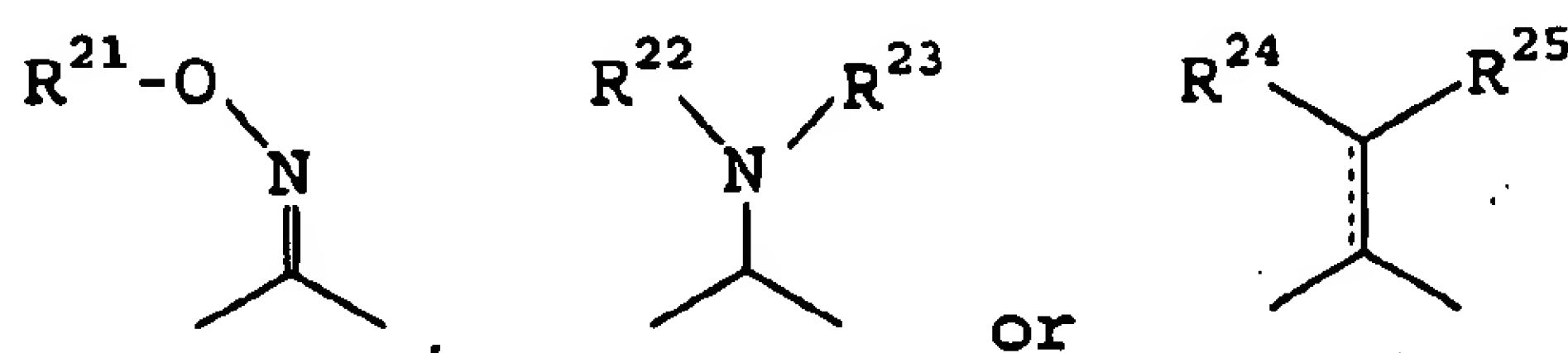
R¹ represents a halogen atom, a cyano group, a nitro group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group;

R³ represents a halogen atom, a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group, a carbamoyl group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group;

R⁴ represents a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl,

alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group;

X^1 represents $-C(O)-$, $-CH(OH)-$, $-CH_2-$ or a group of the following formula:



wherein R^{21} represents an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, acyl or heterocycle-lower alkyl group;

R^{22} and R^{23} may be the same or different represent a hydrogen atom or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, acyl, carbamoyl, alkylsulfinyl, alkylsulfonyl, arylsulfonyl or heterocyclic group; and

R^{24} and R^{25} may be the same or different represent a hydrogen atom, a halogen atom, a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; the double line of which one line is a broken line denotes a single bond or a double bond; and

W represents $-Z-COR^{26}$, $-Z-COOR^2$, $-O-CH_2COOR^2$ or $-O-CH_2CH_2COOR^2$, wherein Z represents $-(CH_2)_n-$ in which n represents 0, 1, 2 or 3 with the proviso that when W is $-Z-COOR^2$, n is 2 or 3, $-CH_2CH(CH_3)-$, $-CH=CH-$ or $-CH_2CH=CH-$; R^2 represents a hydrogen atom or a protecting group for carboxyl group; and R^{26} represents $-NHR^{27}$ or $-NHSO_2R^{28}$ in which R^{27} and R^{28} independently represent an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl or aralkyl group;

or a salt thereof.

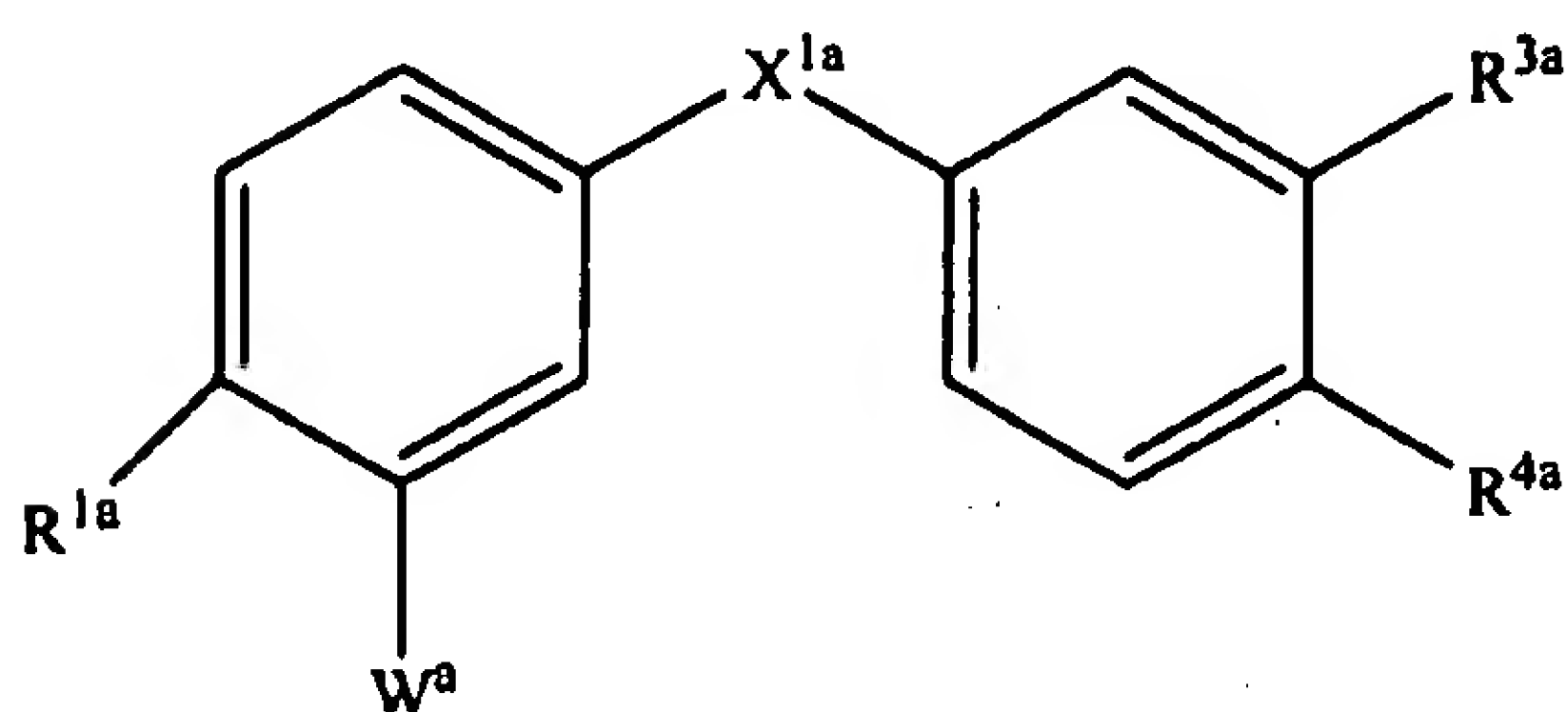
²
 Claim ~~10~~ (Previously Presented) A benzene derivative or a salt thereof according to Claim ~~9~~¹, wherein W is -Z'-COOR^{2'}, -Z'-CONH-SO₂R^{28'}, -CONH-CH₂COOR^{2'} or -CONH-CH₂CH₂COOR^{2'} wherein Z' represents -(CH₂)_{n'}- in which n' is 0, 1 or 2,

with the proviso that when W is -Z-COOR², n is 2 or 3, or -CH=CH-; R^{28'} represents an unsubstituted or substituted alkyl group; and R^{2'} represents a hydrogen atom or a protecting group for carboxyl group; and X¹ is -C(O)-, -CH(OH)- or -CH₂-.

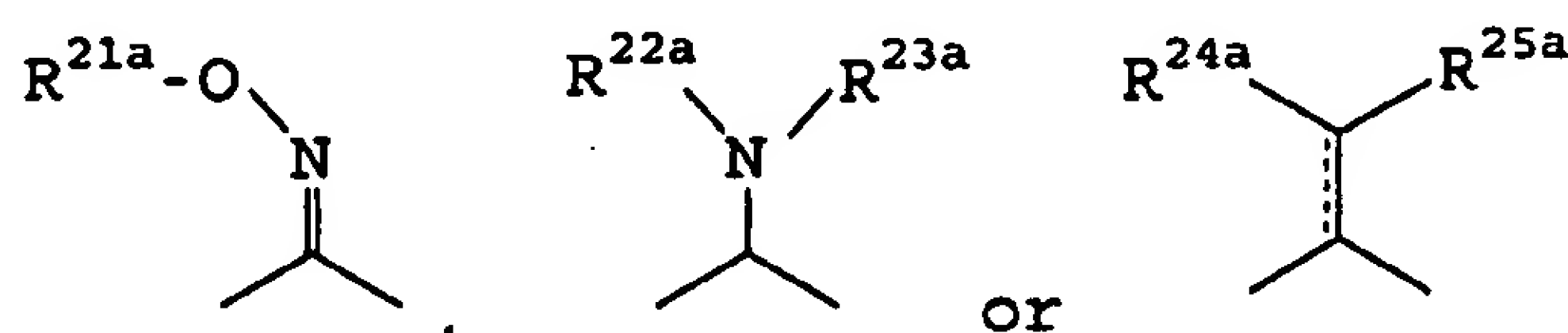
³
 Claim ~~11~~ (Previously Presented) A benzene derivative or a salt thereof according to Claim ~~10~~², wherein R¹ is an unprotected or protected hydroxyl group or an unsubstituted or substituted alkoxy group; R³ is an unprotected or protected hydroxyl group or an unsubstituted or substituted alkoxy group; and R⁴ is an unprotected or protected hydroxyl group or an unsubstituted or substituted alkoxy group.

Claims 12-15 (Cancelled)

⁴
 Claim ~~16~~ (Previously Presented) A benzene derivative represented by the following formula:



wherein R^{1a} represents a halogen atom, a cyano group, a nitro group, an unprotected or protected hydroxyl group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; R^{3a} and R^{4a} , which may be the same or different, each represent a halogen atom, a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; X^{1a} represents $-C(O)-$, $-CH(OH)-$, $-CH_2-$ or a group of the following formula:

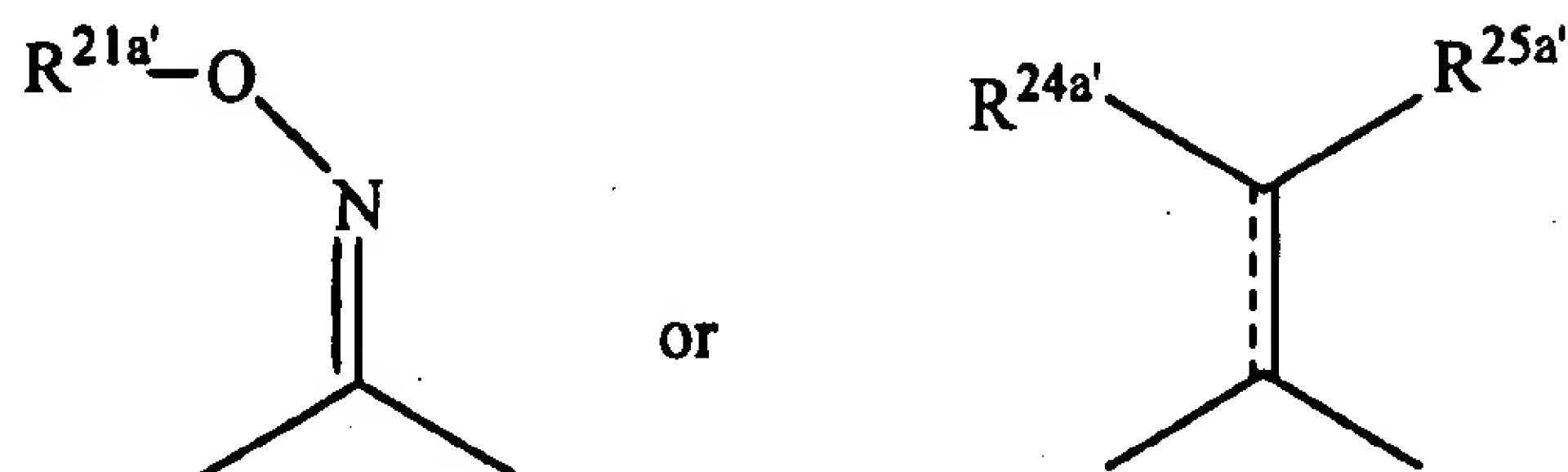


wherein R^{21a} represents an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, acyl or heterocycle-lower alkyl group; R^{22a} and R^{23a} may be the same or different represent a hydrogen atom or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, acyl, carbamoyl, alkylsulfinyl, alkylsulfonyl, arylsulfonyl or heterocyclic group; R^{24a} and R^{25a} may be the same or different represent a hydrogen atom, a halogen atom, a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl,

alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; and the double line of which one line is a broken line represents a single bond or a double bond; and W^a represents $-Z^a-COR^{26a}$, $-Z^a-COOR^{2a}$, $-O-CH_2COOR^{2a}$ or $-O-CH_2CH_2COOR^{2a}$ wherein Z^a represents $-(CH_2)_n^a$, n^a is 0, 1, 2 or 3 with the proviso that when W^a is $-Z^a-COOR^{2a}$, n^a can not be 1, $-CH_2CH(CH_3)-$, $-CH=CH-$ or $-CH_2CH=CH-$; R^{2a} represents a hydrogen atom or a protecting group for carboxyl group; and R^{26a} represents $-NHR^{27a}$ or $-NHSO_2R^{28a}$ in which R^{27a} and R^{28a} independently represent an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl or aralkyl group;

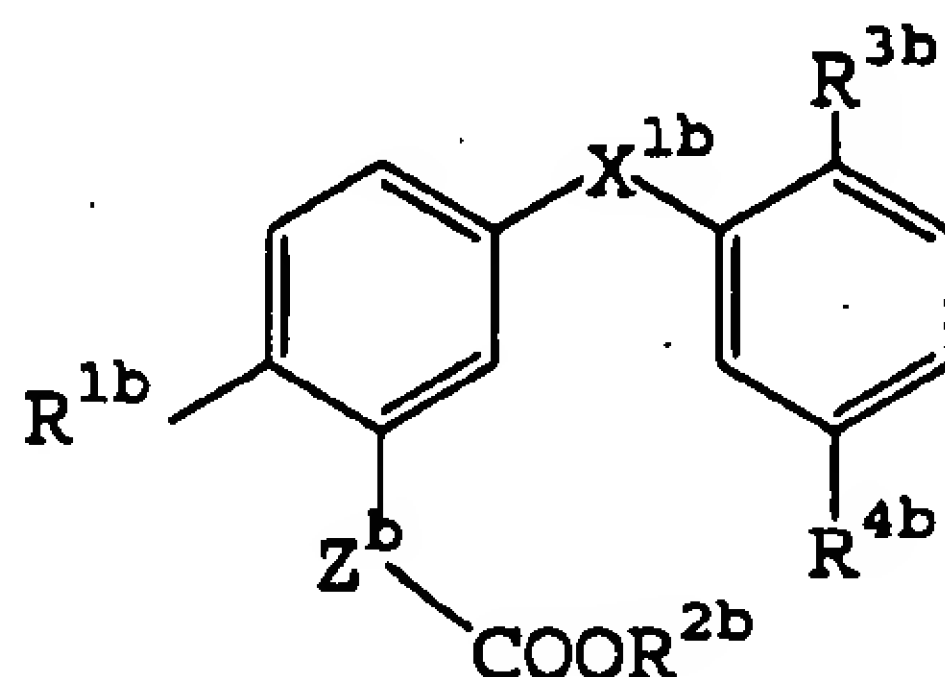
or a salt thereof.

Claim 47 (Previously Presented) A benzene derivative or a salt thereof according to Claim 46, wherein R^{1a} is an unprotected or protected hydroxyl group or an unsubstituted or substituted alkoxy group; R^{3a} and R^{4a} may be the same or different and represent an unprotected or protected hydroxyl group or an unsubstituted or substituted alkoxy group; X^{1a} is $-C(O)-$, $-CH(OH)-$, $-CH_2-$ or a group of the following formula:



wherein $R^{21a'}$ represents an unsubstituted or substituted alkyl, aralkyl or heterocycle-lower alkyl group; $R^{24a'}$ and $R^{25a'}$ may be the same or different represent a hydrogen atom, an unprotected or protected carboxyl group or an unsubstituted or substituted alkyl, alkoxycarbonyl, aryloxycarbonyl or carbamoyl group; and W^a represents $-Z^a-COR^{26a'}$, $-Z^a-COOR^{2a'}$, $-O-CH_2COOR^{2a'}$, $-O-CH_2CH_2COOR^{2a'}$, $-CONH-CH_2COOR^{2a'}$, or $-CONH-CH_2CH_2COOR^{2a'}$ wherein Z^a represents $-(CH_2)_n^a-$ in which n^a is 0, 1, 2 or 3 with the proviso that when W^a is $-Z^a-COOR^{2a'}$, n^a is 2 or 3, $-CH_2CH(CH_3)-$, $-CH=CH-$ or $-CH_2CH=CH-$; $R^{2a'}$ represents a hydrogen atom or a protecting group for carboxyl group; and $R^{26a'}$ represents $-NHSO_2R^{28a'}$ in which $R^{28a'}$ is an unsubstituted or substituted alkyl group.

Claim ^b18 (Previously Presented) A benzene derivative represented by the following formula:



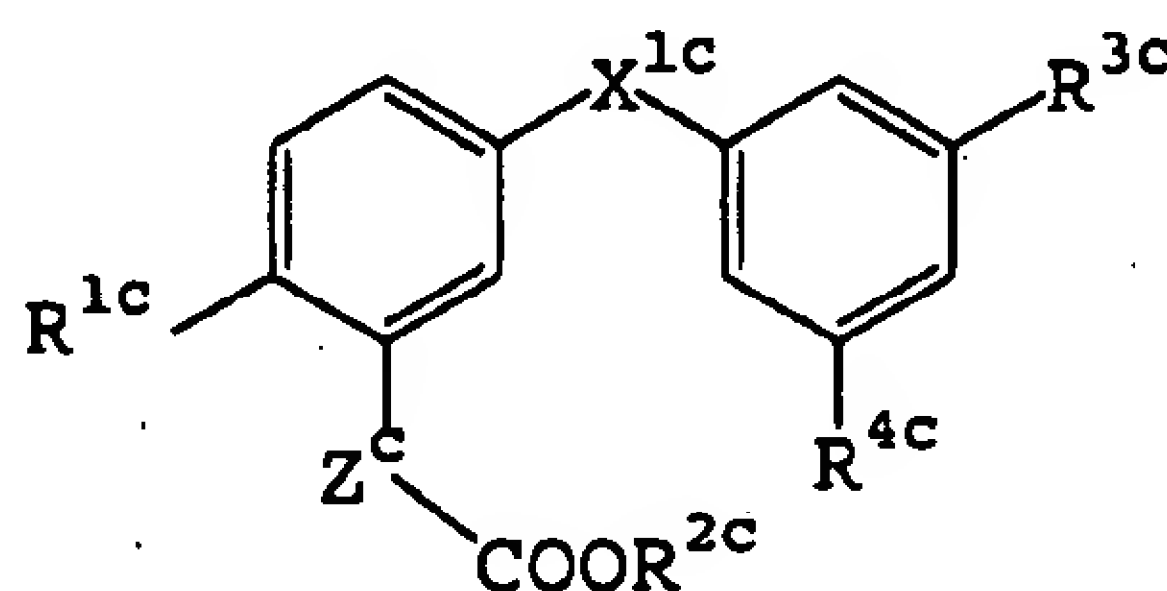
wherein R^{1b} represents a halogen atom, a cyano group, a nitro group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl,

alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; R^{2b} represents a hydrogen atom or a protecting group for carboxyl group; R^{3b} and R^{4b} may be the same or different represent a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; X^{1b} represents $-C(O)-$, $-CH(OH)-$ or $-CH_2-$; and Z^b represents $-(CH_2)_n-$, wherein n^b represents 2 or 3 or $-CH=CH-$;

or a salt thereof.

⁷
Claim ~~19~~ (Previously Presented): A benzene derivative or a salt thereof according to ⁶
Claim ~~18~~, wherein R^{1b} is an unsubstituted or substituted alkoxy group; R^{3b} and R^{4b} may be the same or different represent an unprotected or protected hydroxyl group or an unsubstituted or substituted alkoxy group; X^{1b} is $-C(O)-$; and Z^b is $-(CH_2)_2-$ or $-(CH_2)_3-$.

⁸
Claim ~~20~~ (Previously Presented) A benzene derivative represented by the following formula:



wherein R^{1c} represents a halogen atom, a cyano group, a nitro group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an

unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; R^{2c} represents a hydrogen atom or a protecting group for carboxyl group; R^{3c} and R^{4c} may be the same or different represent a halogen atom, a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; X^{1c} represents $-C(O)-$, $-CH(OH)-$ or $-CH_2-$; and Z^c represents $-(CH_2)_n-$, wherein n^c represents 2 or 3 or $-CH=CH-$;

or a salt thereof.

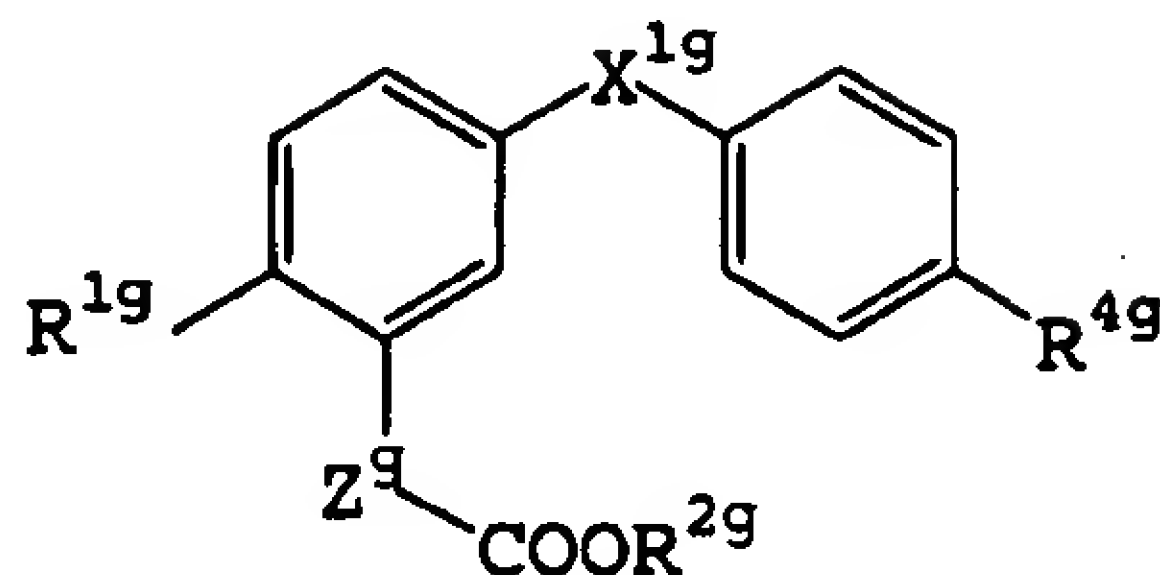
9

Claim 21 (Previously Presented) A benzene derivative or a salt thereof according to Claim 20, wherein R^{1c} is an unsubstituted or substituted alkoxy group; R^{2c} is a hydrogen atom or a protecting group for carboxyl group; R^{3c} and R^{4c} may be the same or different represent an unsubstituted or substituted alkoxy group; X^{1c} represents $-C(O)-$; and Z^c represents $-(CH_2)_2-$ or $-(CH_2)_3-$.

Claims 22-27 (Cancelled)

10

Claim 28. (Previously Presented) A benzene derivative represented by the following formula:



wherein R^{1g} and R^{4g} may be the same or different represent an unprotected or protected hydroxyl group or an unsubstituted or substituted alkoxy group; X^{1g} is $-C(O)-$, $-CH(OH)-$ or $-CH_2-$; Z^g is $-(CH_2)_n-$, wherein n^g represents 2 or 3; and R^{2g} is a hydrogen atom or a protecting group for carboxyl group;

or a salt thereof.

¹¹
Claim ~~29~~ (Previously Presented) A compound or a salt thereof according to Claim ¹~~9~~, wherein said compound is a compound that has an activity of antagonistically inhibiting the combination between AP-1 and a recognition sequence thereof.

Claim 30 (Canceled)

¹²
Claim ~~31~~ (Previously Presented) A method for inhibiting AP-1 which comprises contacting a compound or a salt thereof according to Claim ¹~~9~~ with an AP-1 binding site.

Claim 32-34 (Canceled)

¹⁷
Claim ~~35~~ (Previously Presented) The compound or a salt thereof according to Claim ¹~~9~~, which antagonistically inhibits the combination between AP-1 and a recognition sequence thereof.

Claim 36 (Canceled).

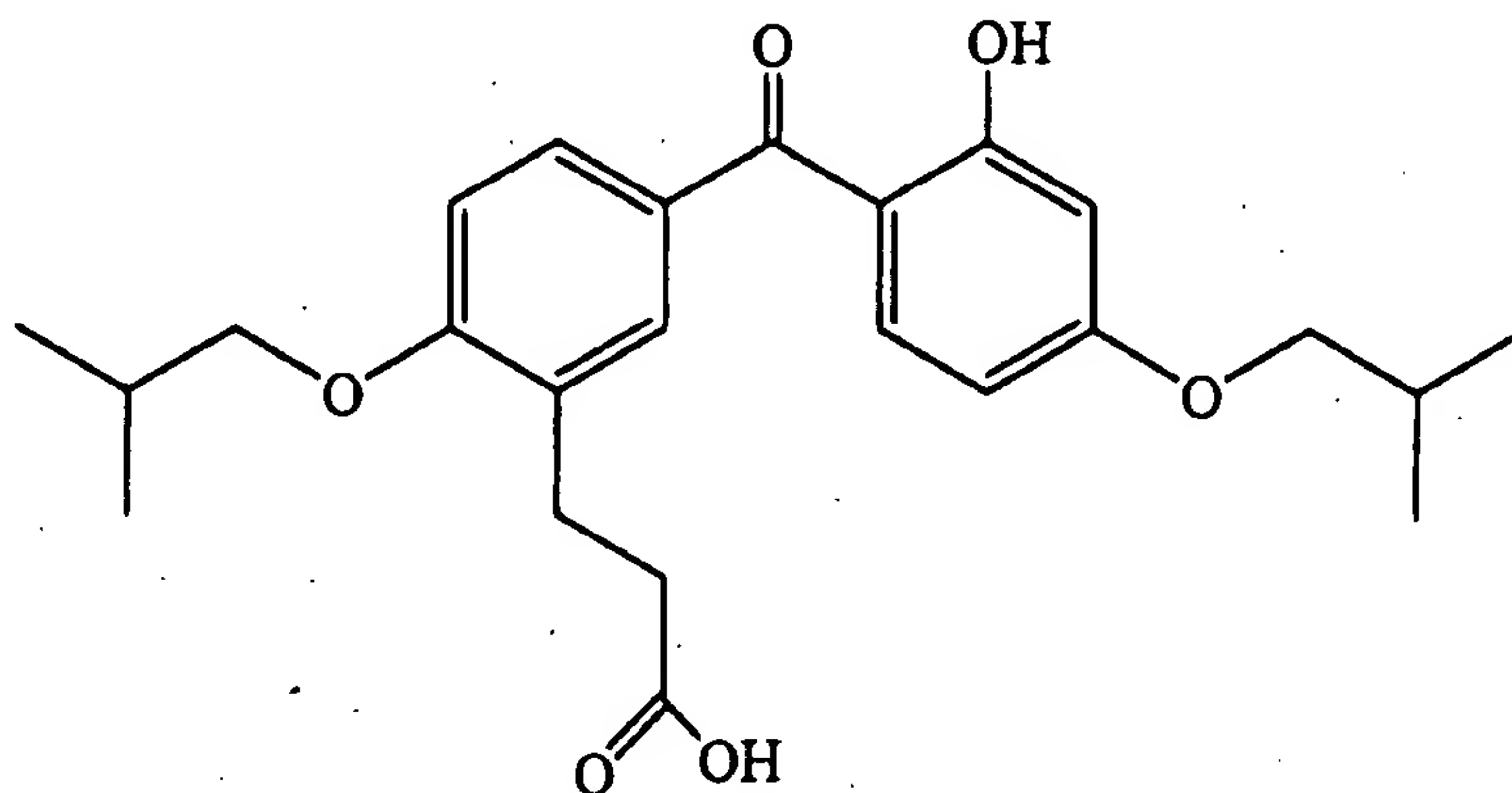
¹⁴
Claim ~~37~~ (Previously Presented) A method for inhibiting AP-1 which comprises administering an effective amount of the compound or a salt thereof according to Claim ~~9~~ to a subject in need thereof.

Claim 38 (Canceled)

¹⁵
Claim ~~39~~. (Previously Presented) An agent for treating an autoimmune disease, which comprises a compound or a salt thereof according to Claim ~~9~~.

¹⁶
Claim ~~40~~. (Previously Presented) A composition comprising the compound or a salt thereof according to Claim ~~9~~ in an amount sufficient to inhibit AP-1 activity.

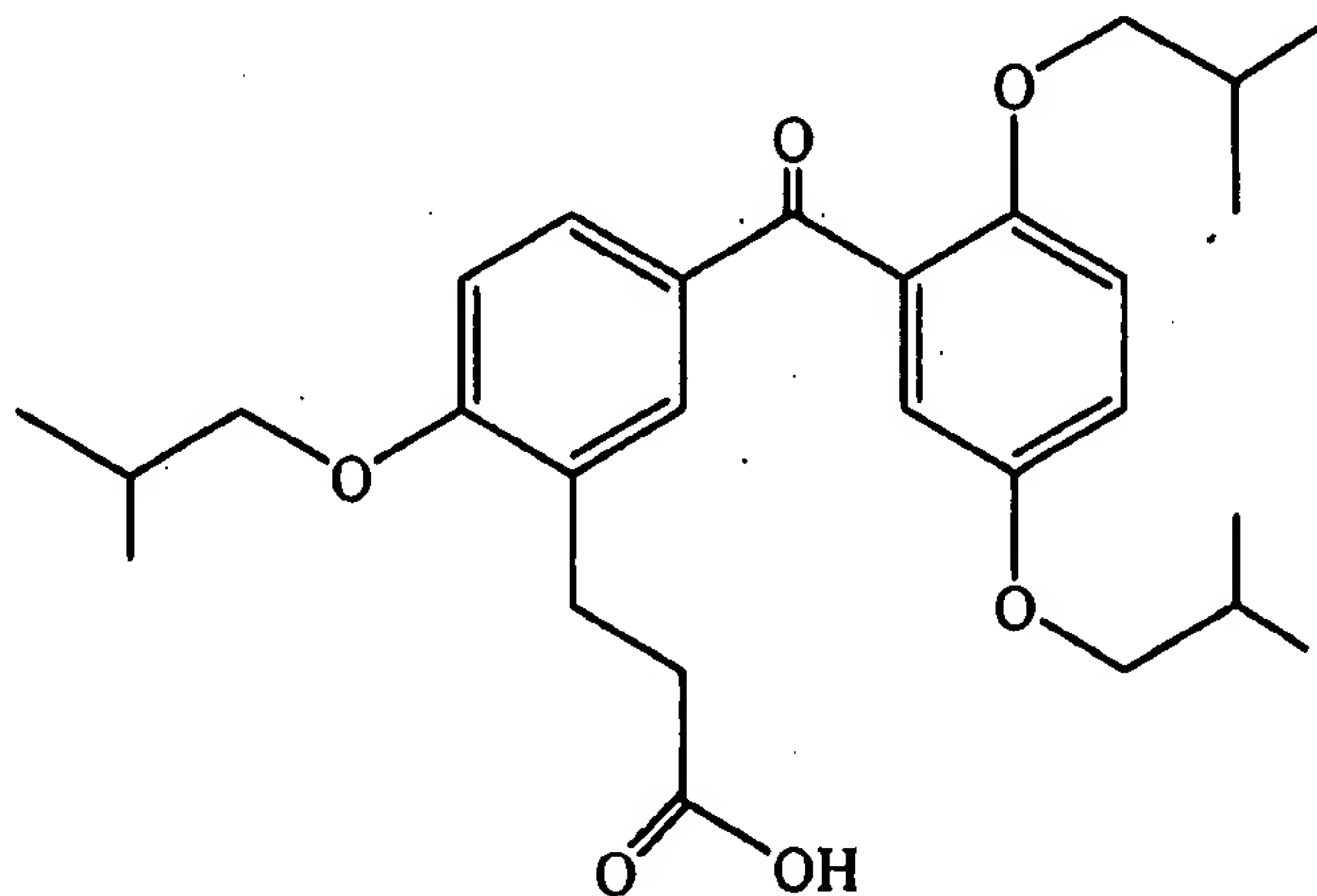
¹⁷
Claim ~~41~~. (Previously Presented) A benzene derivative according to Claim ~~9~~, having the following formula:



Claims 42-44 (Canceled)

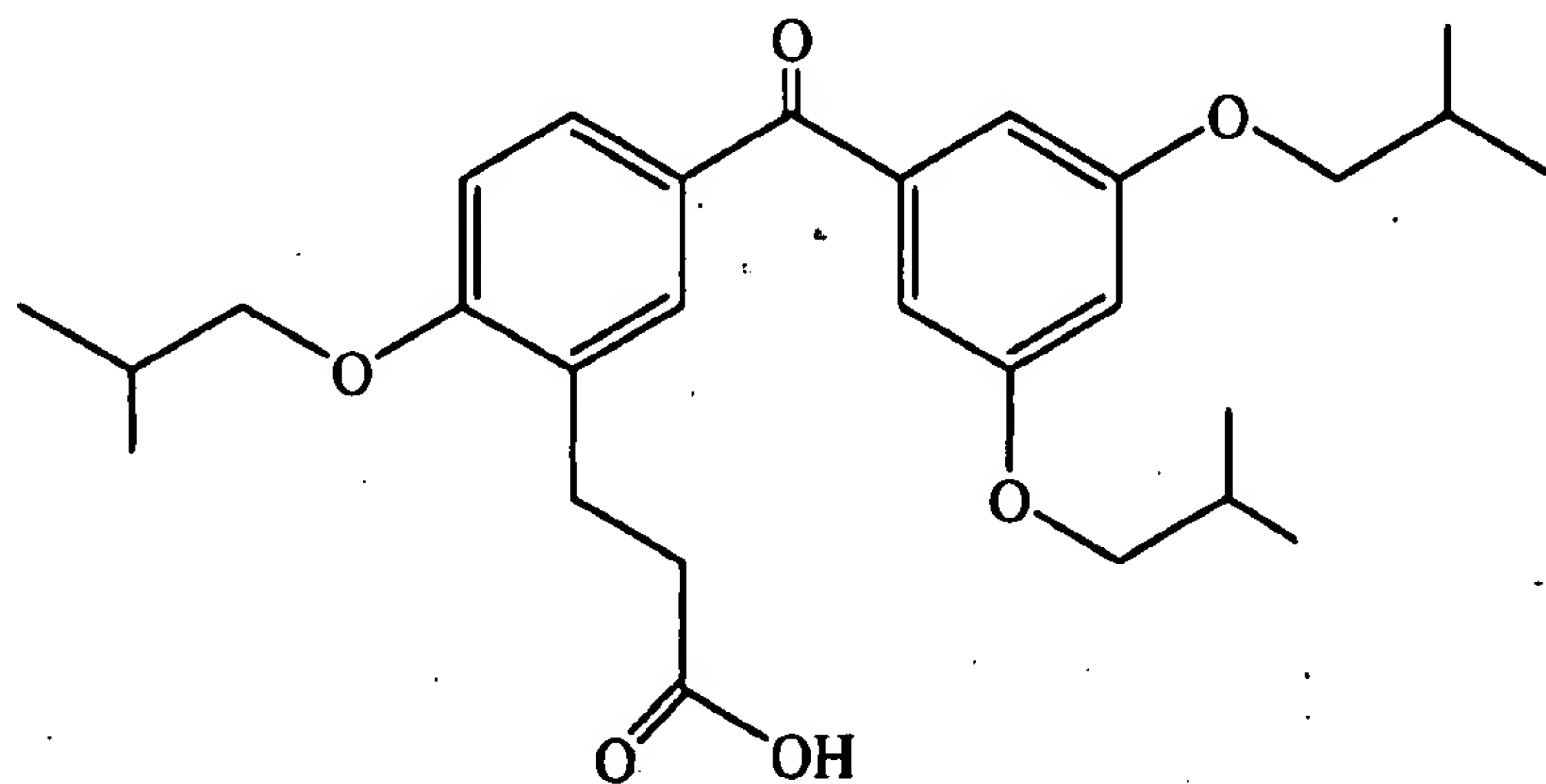
¹⁸
Claim ~~45~~ (Previously Presented) A benzene derivative according to Claim ⁶~~18~~,

having the formula:



¹⁹
Claim ~~46~~ (Previously Presented) The benzene derivative according to Claim ⁸~~20~~,

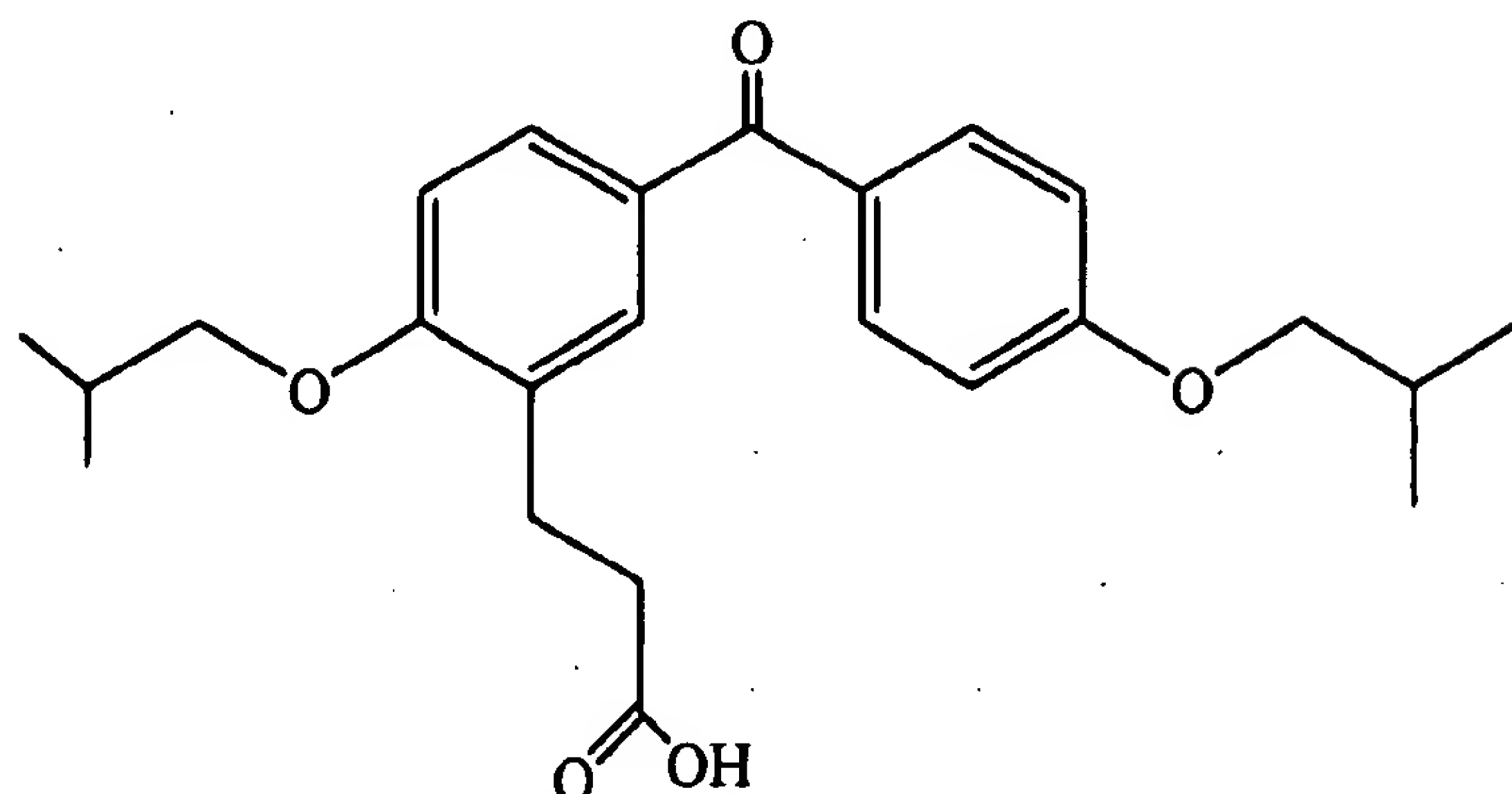
having the formula:



Claims 47-49 (Cancelled)

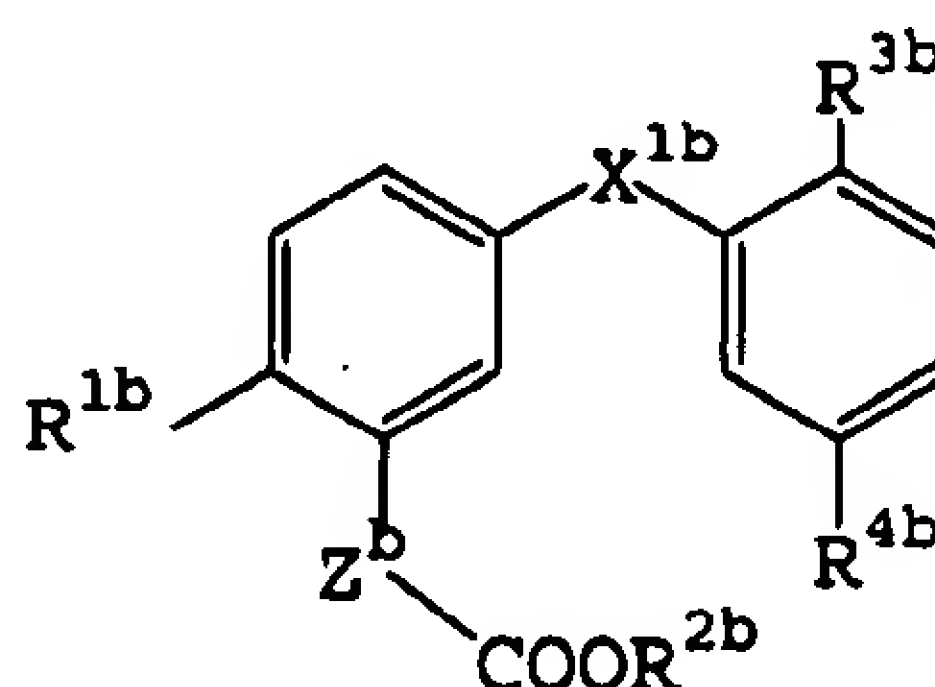
²⁰
Claim ~~50~~ (Previously Presented) The benzene derivative according to Claim ¹⁰~~28~~,

having the formula:



21

Claim 54. (Previously Presented) A benzene derivative represented by the following formula:

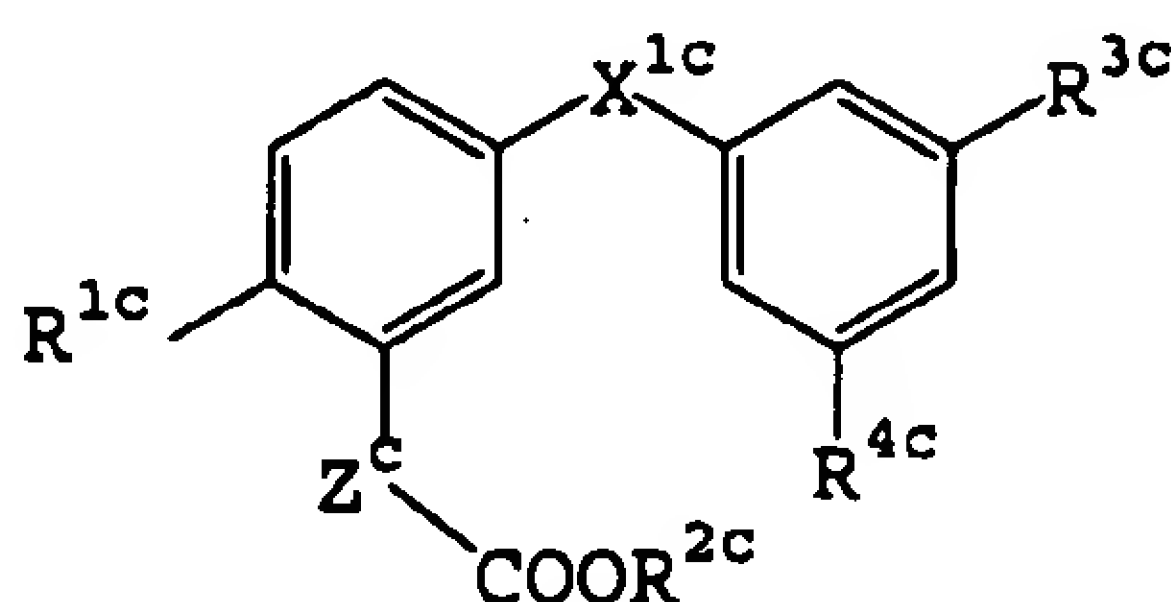


wherein R^{1b} represents a halogen atom, a cyano group, a nitro group, a protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; R^{2b} represents a hydrogen atom or a protecting group for carboxyl group; R^{3b} and R^{4b} may be the same or different represent a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; X^{1b}

represents $-\text{C}(\text{O})-$, $-\text{CH}(\text{OH})-$ or $-\text{CH}_2-$; and Z^b represents $-(\text{CH}_2)_n^b$ - (n^b represents 2 or 3 or $-\text{CH}=\text{CH}-$;

or a salt thereof.

²²
Claim 52. (Previously Presented) A benzene derivative represented by the following formula:

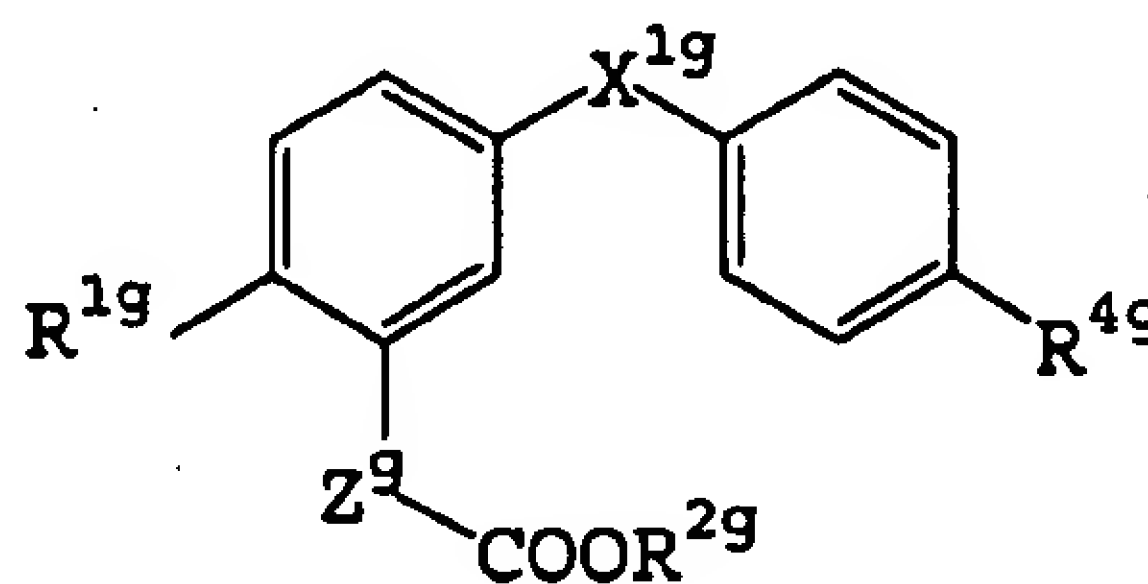


wherein R^{1c} represents a halogen atom, a cyano group, a nitro group, a protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; R^{2c} represents a hydrogen atom or a protecting group for carboxyl group; R^{3c} and R^{4c} may be the same or different represent a halogen atom, a cyano group, a nitro group, an unprotected or protected carboxyl group, an unprotected or protected hydroxyl group, an unprotected or protected amino group, a mercapto group or an unsubstituted or substituted alkenyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, acylamino, alkylsulfonylamino, arylsulfonylamino or heterocyclic group; X^{1c} represents $-\text{C}(\text{O})-$, $-\text{CH}(\text{OH})-$ or $-\text{CH}_2-$; and Z^c represents $-(\text{CH}_2)_n^c$ - (n^c represents 2 or 3) or $-\text{CH}=\text{CH}-$;

or a salt thereof.

²³
Claim 53. (Previously Presented) A benzene derivative represented by the following

formula:



wherein R^{1g} is a protected hydroxyl group and R^{4g} an unprotected or protected hydroxyl group or an unsubstituted or substituted alkoxy group; X^{1g} is $-C(O)-$, $-CH(OH)-$ or $-CH_2-$; Z^g is $-(CH_2)_n-$ (n^g represents 2 or 3); and R^{2g} is a hydrogen atom or a protecting group for carboxyl group;

or a salt thereof.